Australian Government
Department of Defence
Capability Acquisition and Sustainment Group

scram™
SCHEDULE COMPLIANCE RISK ASSESSMENT METHODOLOGY

Schedule Compliance Risk Assessment Methodology

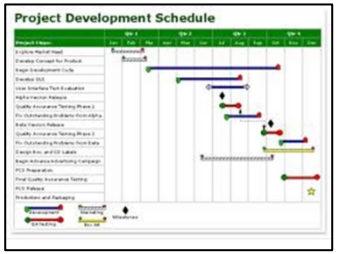
Presented by:
Mr Adrian Pitman
SCRAM Principal
Director Acquisition Engineering Improvement (DAEI)
Capability Acquisition and Sustainment Group

Defending Australia and its National Interests
www.defence.gov.au

SCRAM Has Been Developed

To benefit decision makers, program managers and the acquisition community…

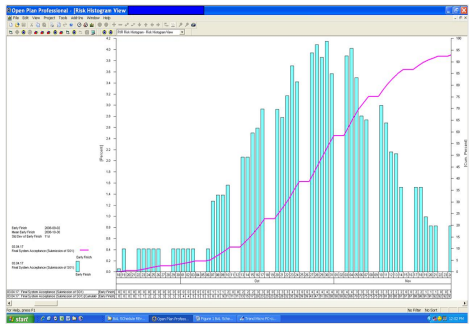
by providing a methodology that assists senior leadership…



to understand risks and/or root causes of schedule slippage and undertake corrective action.

What is SCRAM?

- An independent assessment method used to:
  - identify issues and risks to schedule compliance
  - quantify the schedule impact of issues and risks
  - forecast major milestones using scientific analysis techniques
    - Schedule Monte Carlo Simulation
    - Software Parametric Modelling



- Engineering based - embodies best practices from:
  - systems and software engineering
  - schedule development and project execution

- Provides feedback on systemic issues to facilitate CASG organisational improvements

What SCRAM is NOT

- An Audit
  - It does not focus on identifying non-conformance

- A Process Assessment
  - like Capability Maturity Model Integration (CMMI)
  - but SCRAM does identify and treat poor process performance as an issue if process is driving schedule slippage

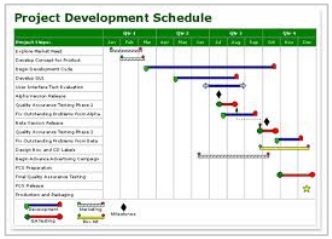
SCRAM Intellectual Property

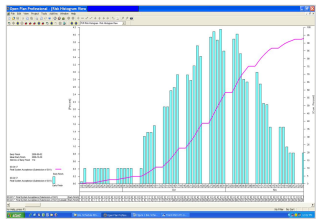
- CASG intends to apply for trademark registration of the SCRAM method
- Needed to protect the integrity and quality of the method

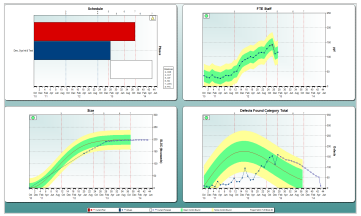
scram™
SCHEDULE COMPLIANCE RISK ASSESSMENT METHODOLOGY

Typical SCRAM Outputs

- Out Brief Presentation and SCRAM Review Report containing:
  - Observations and findings (issues, risks and impacts)
  - Monte Carlo Analysis Results
  - Parametric modeling forecast results
    - For software-intensive systems
  - Recommendations to mitigate risks and remediate issues



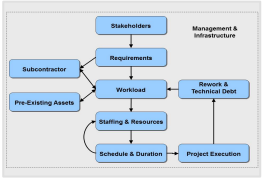
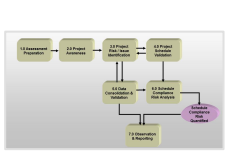
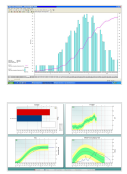




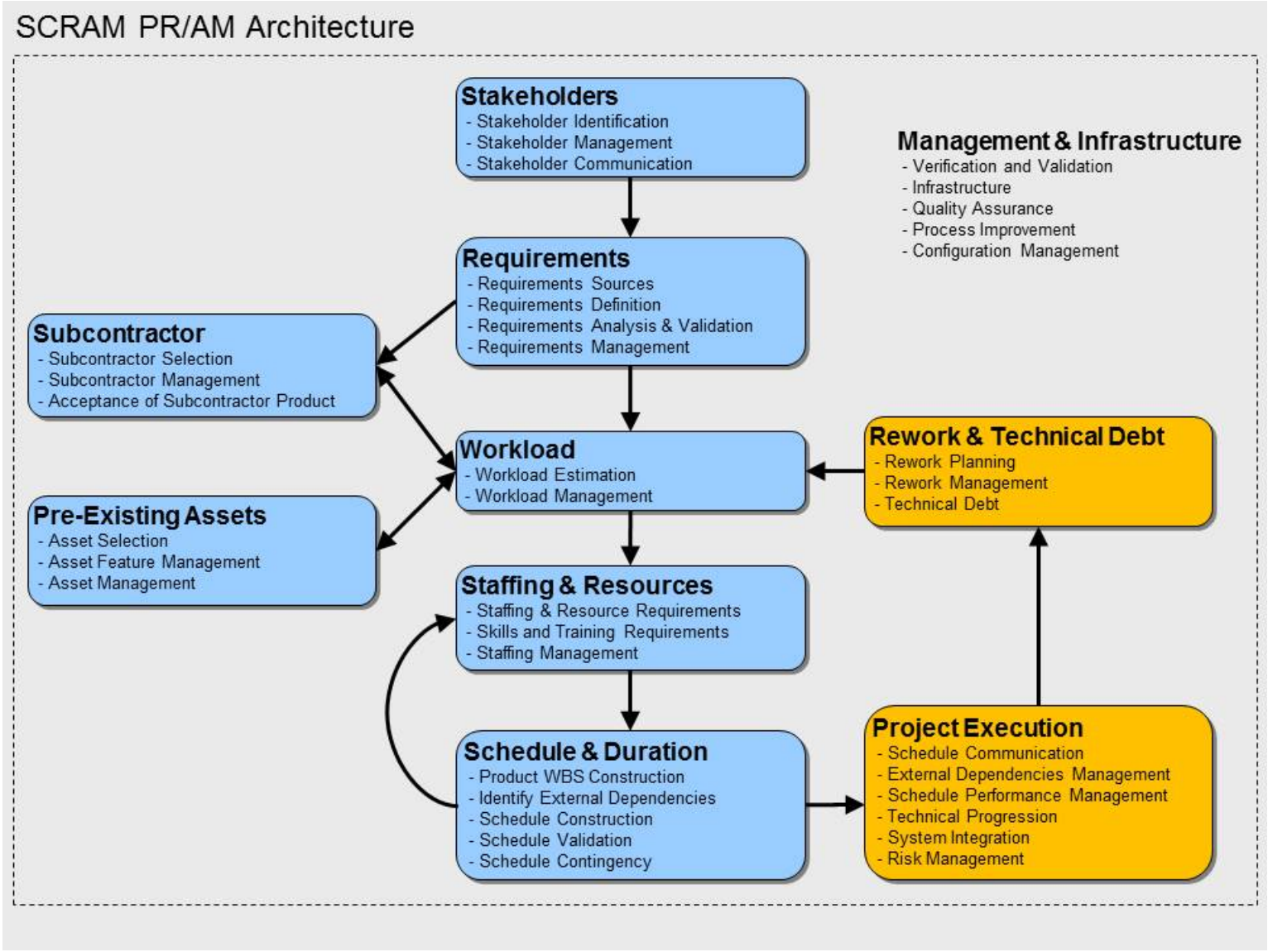
Diversity of SCRAM Reviews

- SCRAM has been proven in a number of technology domains with projects of varying scale and complexity. Domains include:
  - Aerospace
  - Enterprise Resource Planning (ERP)
  - Communications (SATCOM, HF, tactical)
  - Electronic Warfare
  - Maritime
  - Training Systems
  - Command and Control
- SCRAM delivery modes:
  - Pre-emptive (prior to contract award and/or EVM-IBR)
  - Assurance (at any point in the project lifecycle)
  - Diagnostic (when a project is of interest or concern)
  - Retrospective (success factors when a project nears completion)
- The CASG SCRAM Team has completed reviews on 25+ CASG major acquisition projects, 10 in the past year

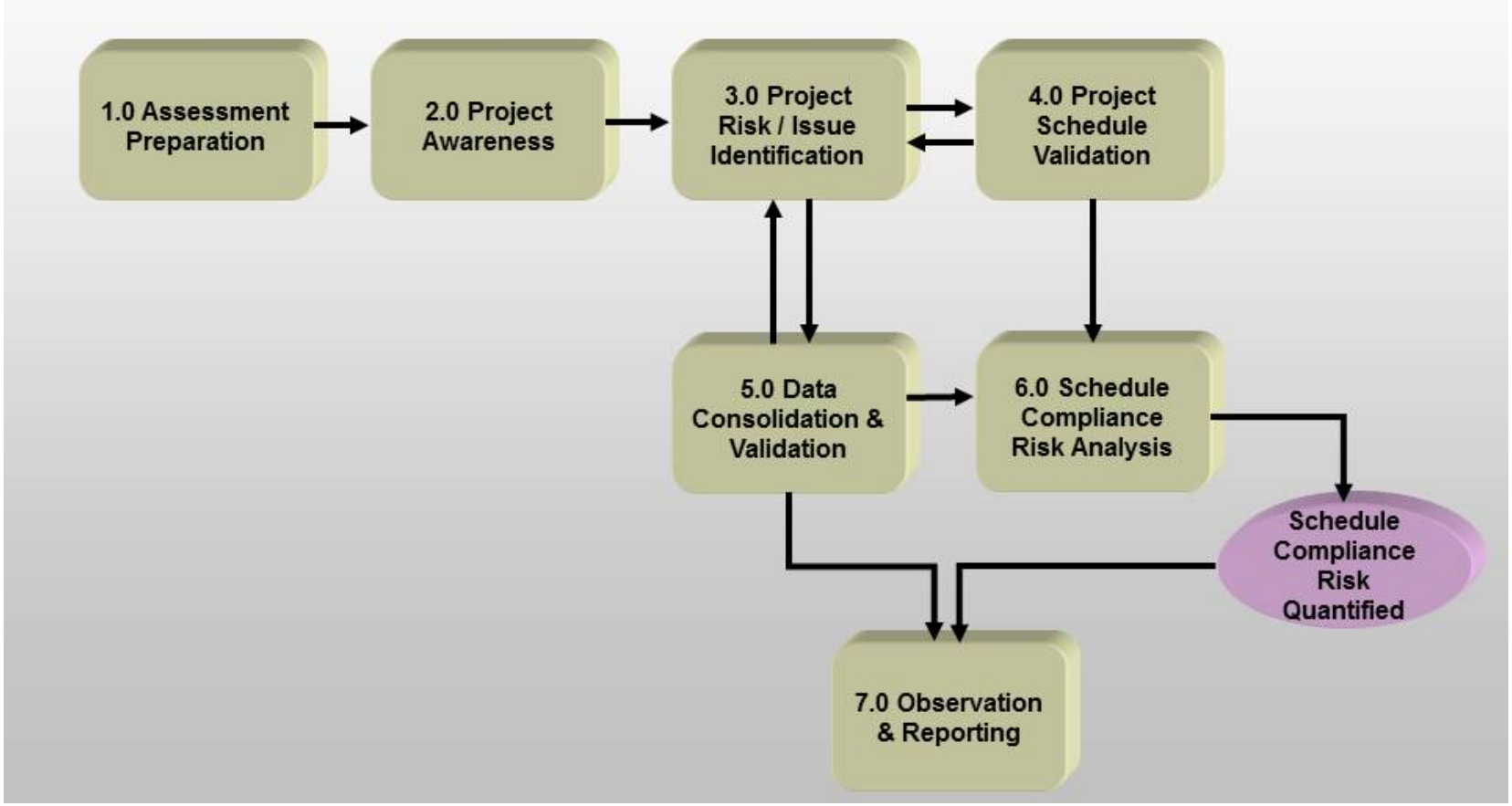
SCRAM Product Suite

Root Cause Analysis of Schedule Slippage (RCASS) Model	
SCRAM Process Reference/Assessment Model (PR/AM)	
Assessment Process and Techniques • **Schedule Monte Carlo Simulation** • **Software Parametric Modelling (Forecasting)**	 
SCRAM PRAM Model and Assessor Training Courses	 
SCRAM Assessor Guidebook	

Root Cause Analysis of Schedule Slippage (RCASS) Model



The SCRAM High Level Review Process



SCRAM Review Key Principles

- Minimal Disruption
  - Artefact Review (plans, procedures, model evidence) conducted offline
  - Information is collected one person at a time
  - Interviews typically last an hour

- Independent
  - Evaluation team members are organisationally independent of the program under review
    - Some SCRAM reviews have been joint contractor/ customer team – facilitates joint commitment to resolve review outcomes

- Non-advocate
  - All significant issues and concerns are considered and reported regardless of origin or source (Customer and/ or Contractor).

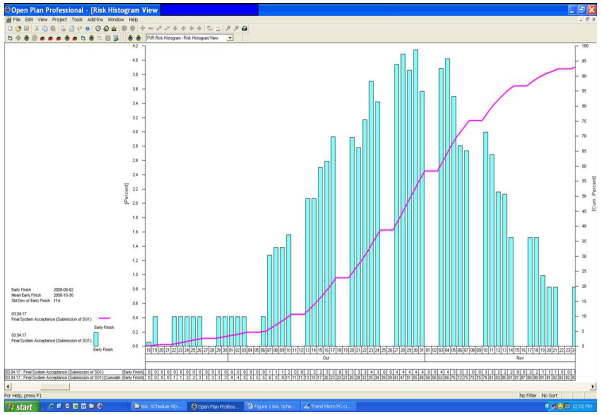
SCRAM Review Key Principles

- Non-attribution
  - Information obtained is not attributed to any individual
  - Focus is on identifying and mitigating the issues/risk
- Corroboration of Evidence
  - Significant Findings and Observations based on at least two independent sources of corroboration
- Rapid turn-around
  - One to two weeks spent on-site
  - Executive out-briefing presented at end of second week
  - Written report two weeks later
- Sharing, Openness and Transparency
  - For reviewees

Schedule Risk Assessment (Monte Carlo)

- Assign three point estimates (Most Likely, Optimistic and Pessimistic) to tasks that are on the Critical or Near Critical Path
  - Estimates are based on identified risks, issues, rework, technical debt and any other sources of delays

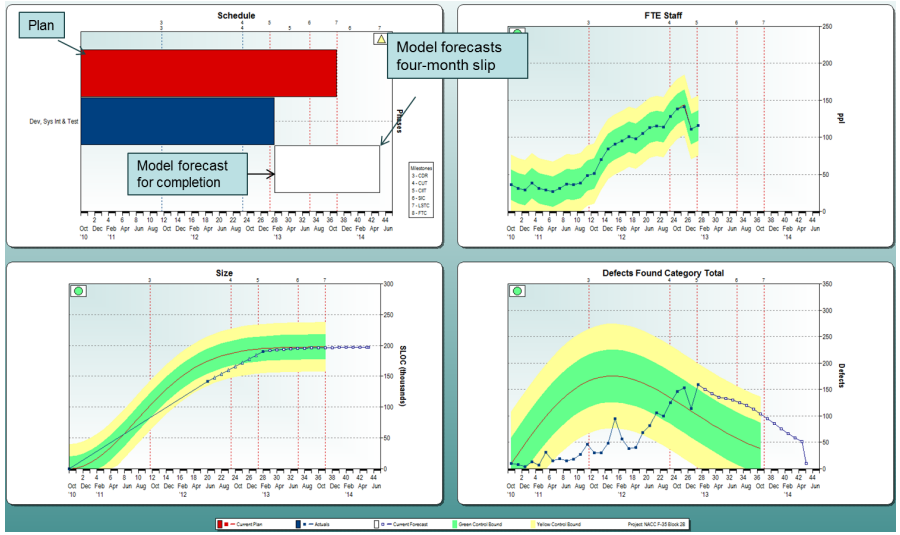
- Perform Monte Carlo Simulation
  - provides a picture of the potential impact of risk and level of confidence on schedule milestones



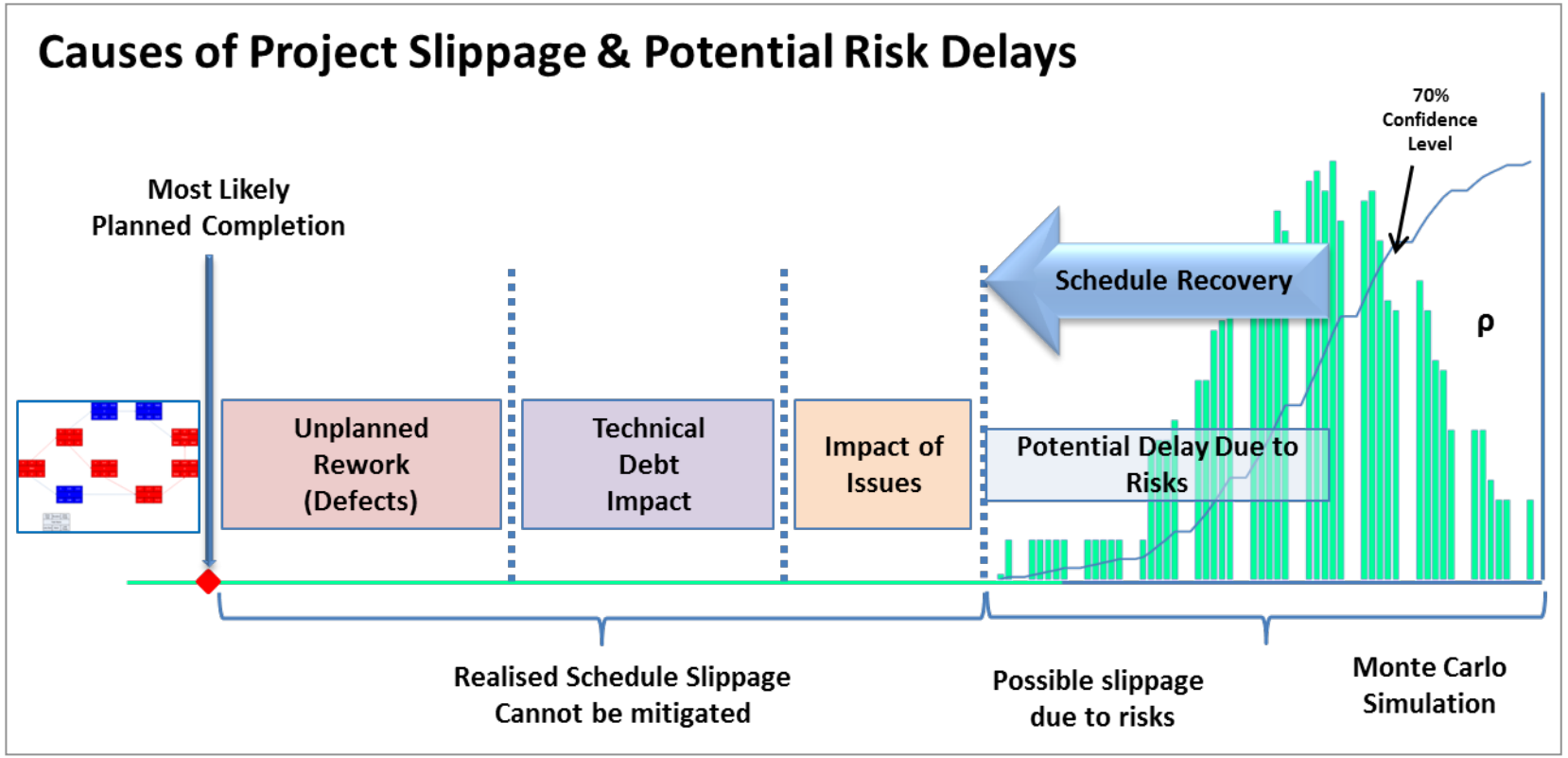
- Projects should use the results of the schedule risk assessment to quantify the potential impact of risk and to validate the effectiveness of risk mitigation

Parametric Model Forecast

- SCRAM uses a parametric model that uses objective performance to date to forecast software completion
- Inputs include planned vs actual:
  - Software size
  - Defects
  - Milestones achieved
  - Staffing



SCRAM Identifies and Quantifies



SCRAM Outcomes

- SCRAM
  - is well accepted by contractors
    - quick, transparent, contractor representation on teams
  - identifies significant issues and risks (usually not in risk registers)
  - is a catalyst to project remediation
  - focuses improvement actions

- SCRAM was the first independent review to report turn-around of the F-35 Joint Strike Fighter (JSF) mission systems software development

- SCRAM led to a major re-plan of the F-35 logistics support system (ALIS) to meet US Marine IOC

"We engage SCRAM because, being embedded in the project, we can get a feel that the project is heading in the wrong direction but we can't get a feel for why"

- Anzac SPO Generation Director

SCRAM Recognition

- Referenced in the ANAO Audit Reports
  - ANAO has expressed interest in using SCRAM reports as an input into ANAO audits
- Used to inform F-35 JSF Program Executive Officer (Lt Gen Bogdan) prior to his appearance before US Defense Acquisition Board (2013 – 2015)
- Led to CASG participation as the only international partner on the US Congressional Software Review Team for the JSF (2014)
- SCRAM best practices incorporated into Australian Software Intensive System Acquisition Management (SiSAM) training
- CASG staff trained in SCRAM ~ 100
- Contractors trained ~45

Questions & Discussion

Further information:
www.scramsite.org